Journal Pre-proof

Exposure to Negative Foreign COVID-19 News Predicts lower Support for Immigration Policy in China

Zhe-Fei Mao, Qi-Wei Li, Yi-Ming Wang, Jie Zhou

Exposure to Negative Foreign COVID-19 News Predicts lower Support for Immigration Policy in China

Exposure to Negative Overseas COVID-19 News Reduces Support for Immigration Policy

Zhe-Fei Mao[1,2,3], Qi-Wei Li[2,3], Yi-Ming Wang[2,3] and Jie Zhou[2,3]

1. Department of Experimental Clinical and Health
Psychology, Ghent University, Henri Dunantlaan 2, 9000 Ghent, Belgium.
2. Key Laboratory of Behavioral Science, Institute of Psychology, Chinese Academy of
Sciences, Beijing 100101, China
3. Department of Psychology, University of Chinese Academy of Sciences, Beijing
100049, China

Abstract

We present a framework for studying the spillover effect of negative foreign COVID-19 news on attitudes towards immigration. Our framework proposes that exposure to negative COVID-19 news from foreign countries can activate negative associations with foreigners, reduce positive attitudes towards them, and increase perceived threat, ultimately leading to decreased support for immigration. We conducted three studies to test this framework. Study 1 found that exposure to negative COVID-19 news about a foreign country increased negative valence associations with that country. Study 2 showed that exposure to more negative COVID-19 news about foreign countries was associated with lower acceptance of immigration policies in real life. Study 3 replicated the spillover effect of negative news exposure using a scenario manipulation. The

effects of negative news exposure on immigration policy acceptance in both Studies 2 and 3 were mediated by changes in foreigner attitudes and intergroup threat. Our results demonstrate the important spillover effect of negative foreign COVID-19 news exposure on immigration attitudes and highlight the association perspective as a foundation for understanding attitude changes during the COVID-19 pandemic.

Keywords: COVID-19, immigration policy, associations, intergroup threat, spillover effect

The COVID-19 pandemic has been the spotlight in the media worldwide since early 2020. While research has shown that the media has a huge influence on people's cognition and attitudes towards specific targets (Conway et al., 2015; Miller, 2007; Russell Neuman et al., 2014), the impact of COVID-19 news on immigrants is barely known. Previous evidence revealed that people's attitudes towards immigrants and immigration policy (as well as behaviors towards immigrants) are highly influenced by immigrant-relevant news, where immigrants are usually negatively depicted (e.g., De Poli et al., 2016; Esses et al, 2013; Esses et al, 2008; Schlueter & Davidov, 2013). However, it remains a question whether news directly targeting immigrants is necessary to foster such attitudes and behaviors. Indeed, some studies indicate that the influence of media messages about a target spills over to other targets (e.g., Sikorski et al., 2019; Bless & Schwarz, 1998). However, it may not be necessary to activate an anti-immigrant attitude based on the reason for these media messages. For example, news about COVID-19 may foster negative attitudes towards immigrants, and attitudes and behaviors towards immigration policy may therefore be influenced by news about the pandemic rather than about immigrants. A very large proportion of information about COVID-19 foreign on the media was negative (e.g., the severity and number of deaths). We argue that negative

news about COVID-19 foreign could have a spillover effect on attitudes towards

immigration.

Spillover Effect of Media News

Few studies have focused on the spillover effect of media news, and they have

revealed three different types of spilling. First, the effect of media reports on a specific

object spills over into more general values. For example, media reports on sex and

marriage issues can reduce people's approval of more general LGBT rights (Engel,

2013). In addition, media reports on political scandals could reduce general public

political trust, because supporters engage in a "rational" updating process using negative

media reports as new information to update prior evaluations towards politicians or their

party (Sikorski et al., 2019). Second, media reports on a given object can influence

people's attitudes toward other related entities. Sikorski et al. (2019) found that media

news on one politician's scandals also changed public attitudes toward other politicians.

This effect, depending on participants' knowledge and how the information was used

(Régner & Floch, 2005), is sometimes called *assimilation* or *contrast effects* (Bless &

Schwarz, 1998; Puente-Diaz, 2015). If the object of negative media news is part of a

larger group, these media reports negatively influence other group members, because all

of them are in an assimilation relationship.

Third, the effects of media news can spill over into some indirectly related

attitudes. For example, Engel (2013) found that media news on same-sex marriage

decreased support for broader LGBT rights because people felt uncomfortable with same-

sex marriage. Bless and Schwarz (1998) and Fabrigar et al. (1998) suggested that media

messages could not only be used to construct attitudes towards related objects but also

make these attitudes more accessible. Given this point, when an object unrelated to media targets appeared, as long as it had some connections with those targets, the evaluation of this object would be influenced.

Similarly, we argue that negative foreign news about COVID-19 might prime a negative concept of foreign countries and construct negative attitudes towards people from those countries. When evaluating an immigration policy, people tend to hold more negative attitudes as there are relations between accessible attitudes towards foreigners and immigration policy. Therefore, we predict that COVID-19 media news on the pandemic situation in foreign countries has a spillover effect on attitudes towards immigration policy through associative attitude processes (see below).

Associative Attitude Processes Behind the Spillover Effect

One of the definitions of attitude refers to the association between valence and an object or concept (Greenwald & Lai, 2020). For example, when I say "I like Chinese dishes, they are tasty," there should be an association between "tasty" and "Chinese dishes" in my mind. Similar associations can also be constructed by media messages, i.e., "immigrants are dangerous." Attitude forms when the media repeatedly makes those narrative description. People   can learn a negative or positive attitude after exposure to these evaluative statements (Van Dessel & De Houwer, 2019; Kurdi & Banaji, 2017; Rydell et al., 2007)

Furthermore, associations could be considered as a part of the concept network in memory, while one concept connects with another concept when they share common properties, and when a concept is stimulated, activation spreads along the paths of the network (Collins & Loftus, 1975). In other words, concepts connect to each other in a

conceptual network, and other concepts can be activated via the center node if some concepts are primed (see also Greenwald & Banaji, 1995; Gawronski & Bodenhausen, 2014). This could explain the spillover effect of media news. Considering Sikorski et al. (2019) finding, for example, politicians should share a concept network and associate with each other because there are some common features among them, so the priming of one could activate the others (Hughes et al., 2020).

Building on this, we propose negative news about COVID-19 in foreign countries may affect people's attitudes towards foreigners due to shared characteristics. News mentioning foreign countries can activate the concept of foreigners, leading to changes in attitudes. This could increase xenophobia and prejudice towards foreigners.

The Role of Intergroup Threat on Immigration Issues

Traditionally, media messages directly about immigrants can cause strong intergroup threats, uncertainty, and unease because immigrants are usually depicted by domestic media as "enemies at the gate" who are attempting to invade the nation (Esses et al., 2013). Schlueter and Davidov (2013) analyzed Spanish media reports on immigration issues from 1996–2007 and found that the increase in negative reports was in line with the increase in perceived threats towards immigrants (see also Das et al., 2009; De Poli et al., 2016; for a review, see Esses et al., 2021). The threats could be higher when immigrants come from a society with a culture and identity that differ significantly from those of the host society (Esses, 2020)

The COVID-19 pandemic has amplified health and economic apprehensions, leading to a greater perception of immigrants as threats (Esses & Hamilton, 2021).

According to Croucher et al. (2020), believing in social media news was positively linked to perceiving the presence of Chinese people as a threat to American identity and the economy, and this perception of threat predicted anti-immigrant attitudes in Canada (Esses, Medianu, & Sutter, 2021). Also in Britain, the COVID-19 pandemic may have exacerbated threat and anti-immigrant attitudes among Leavers (those who support United Kingdom to leave the European Union; Pickup et.al, 2021).

As indicated by *Intergroup Threat Theory* (Stephan & Stephan, 2017), people may feel realistic threats or symbolic threats when they worry about the potential harms from outgroup they are interacting with. Under those feelings, they may get angry or anxious, prime some negative attitudes, and take hostile behaviors to handle the negative situation. Importantly, Stephan et al. (2016) pointed out that a negative attitude towards outgroup can also lead to more perceived threats. In other words, negative attitudes toward outgroup are expected to predispose ingroup members to perceive outgroup as threats. For instance, some researchers have found that negative outgroup stereotypes can predict more realistic and symbolic threats (Aberson & Gaffney, 2009), and negative attitudes towards outgroup (such as racism) were positively related to both realistic and symbolic threats (Renfro et al., 2006).

Therefore, when individuals form a negative attitude towards foreign countries, the perceived threat from immigrants can increase accordingly, which leads to less acceptance of immigration policy. Thus, we proposed that people who are exposed to negative foreign COVID-19 news abroad will hold a more negative foreigner attitude (see Figure 1) based on association (and spread) processes (i.e., there are common features between foreign countries and foreigners, and things with common features are

usually perceived similar; Hughes et al., 2020). Individuals will then likely feel more intergroup threats and oppose immigration policy that facilitates a foreigner immigrating into the country.

[Figure 1]

Overview of the Current Research

The present study aimed to test the spillover effect in Figure 1 through three studies. Using a memory task, Study 1 established an association process underlying the spillover effect, and Studies 2 and 3 examined all the pathways of the model. Specifically, in Study 2 we explored the correlative influence of exposure to negative COVID-19 foreign news using a real case-based survey. In Study 3, we conducted a scenario manipulation and tested the causal effect of exposure to immigrant-unrelated news (natural hazards and emergency management systems in foreign countries) instead of news about COVID-19 to determine whether the perceived threat was due to health concerns specifically. In these studies, we report all measures, manipulations, and exclusions. All participants were voluntarily recruited for monetary reward, and the sample sizes were determined before any data analysis.

Study 1

Based on the idea that attitude largely represents an association of valences with a specific object in mind (Greenwald & Lai, 2020), we adopted a unique memory experiment to detect changes in participants' perceptions of two countries after reading COVID-19 news. Countries and adjectives (valences) were carefully selected before the study. According to our expectations, people who read negative news about one country recalled more negative adjectives (indicating more associations of negative valence with

the country) and disliked the country more, and vice versa.

Method

Materials

To select appropriate countries and adjectives, 50 participants were recruited to complete an online questionnaire by sending an survey link on several participant groups on WeChat (composed of students from several nearby universities). Three of them failed the attention check, and the sample size came to 47 (61.7% female, M_{age} = 23.72, SD_{age} = 7.09). The participants evaluated their familiarity (1 = quite unfamiliar, 7 = quite familiar) and attitudes (1 = quite negative, 5 = neutral, 9 = quite positive) towards 23 countries on a Likert scale. Forty-three of the forty-seven participants completed another questionnaire to evaluate twenty-five positive adjectives and twenty-five negative adjectives (1 = quite negative, 5 = neutral, 9 = quite positive). As expected, all positive adjectives were evaluated as positive and all negative adjectives were evaluated as negative. We then randomly chose six positive adjectives and six negative adjectives as our materials for the later memory task.

For country evaluation, Sudan and Tonga were selected because these two countries were evaluated as the most unfamiliar and neutral of twenty-three countries. We then fabricated negative news about the COVID-19 situation in Tonga and positive news in Sudan. For details, see

https://osf.io/s94gz/?view_only=259526b03d3c47099598ba60e8cb5362.

Participants

We recruited forty-four participants by posting experimental information on

several participant groups on WeChat. These groups composed of students from several nearby universities. Participants were compensated monetarily for their participation. Of all the participants, two failed in the manipulation, and one was found to be quite careless during the experiment. Finally, forty-one participants were included in the analysis (81% female, M_{age} = 22.27, SD_{age} = 2.22). Note that each participant provided more than one observation, which produced a total 467 observations.

Procedure

The participants were instructed to complete a three-phase task. Phase one was a memory task where participants paired country and adjective words on a computer screen in the laboratory. The two countries and twelve adjectives chosen in the Materials above were used, and every country was paired with three positive and three negative adjectives (e.g., "Sudan-peaceful"). Twelve pairs of words appeared one by one in a random order. For each pair, a fixation was presented for 300ms in the middle of the screen, followed by a 300-ms interval before the presentation of the paired words. Each pair was presented for 3 s followed by a blank interval of 1 s before the next pair appeared. The participants were asked to memorize the paired words to the best of their ability. After all paired words were presented and they took a 1 min break, the memory task was repeated once again in the same way (i.e., they remembered all pairs twice).

Phase two involved manipulation. Participants were told that before recalling paired words, they would have a reading comprehension test in which they read the two pieces of news described above. Everyone read both the positive news about Sudan and the negative news about Tonga. To ensure that the participants paid attention, they were told that when they finished reading they would need to answer reading comprehension

questions. However, a reading comprehension test did not exist.

In Phase three, participants were given a paper with 50 adjectives (including the 12 adjectives used for pairing in Phase one). For every adjective on the paper, participants were required to recall which country was once paired with it and name the country or indicate that the adjective had not been shown before by skipping that adjective. All 50 adjectives were evaluated in this manner. Note that participants were not reminded of the exact number of paired words (i.e., 12) in the memory task. Then, they had to rank the two countries, where a higher rank meant a more positive attitude towards the country.

Finally, additional questions were asked. For the manipulation check, participants were asked to report the valence of the news for each country. Two of them did not pass because they wrongly recalled that Tonga was positively described in the news while Sudan was negatively described, and was thus excluded from the analysis.

Results

For all 50 adjectives, participants indicated 11.39 (SD = 5.16; < 12) words that had been paired with the two countries. Sudan was recalled as having been paired with more positive adjectives, while Tonga was recalled as having been paired with more negative adjectives (see the upper half of Table 1).

[Table 1]
[Table 2]

As expected, reading news changed the original associations of countries with valences in participants' memories. The number of positive and negative adjectives paired with each country in the memory task was the same. However, after reading news

that depicted Sudan positively, Sudan was recalled as having been paired with 3.88

(159/41) positive adjectives and 2.17 (89/41) negative adjectives. In contrast, Tonga was

recalled as having been paired with more negative adjectives and fewer positive

adjectives, although the difference was subtle.

Since the data was collected through repeated measurements and involves count

data (the number of recalled words), a suitable statistical approach would be to use a

Generalized Linear Mixed Model (GLMM). We fitted a random intercept Poisson

regression model using the lme4 package (Bates et.al., 2015), with participants included

as a random factor. As shows in Table 2, country is interacted with adjective valence, b =

-0.589, se = 0.188, p = 0.002, which means for different country, the valence of recalled

adjectives was different. A further simple effects analysis revealed that for Sudan,

participant recalled significantly more positive adjectives than negative adjective, b = --

0.580, se = 0.132, p < 0.001, while no difference found for Tonga.

Discussion

The results of Study 1 support the idea that news with a specific valence changes

one's memory association. In this study, we created the same associations of valence for

each neutral country, but participants recalled more positive adjectives for positively

depicted countries and more negative adjectives for negatively depicted countries after

reading the two pieces of fabricated COVID-19 news. We also found that participants

held a more positive attitude toward the country that was depicted as positive. Therefore,

negative reports of the COVID-19 pandemic in foreign countries could easily change

individuals' perceptions of foreign countries. However, the subsequent effects of

association changes on foreigner attitudes and immigration policy acceptance remain

unknown.

Study 2

Study 2 aimed to test the subsequent spillover effect of social media news about COVID-19 on immigration policies using a national survey in China. The national survey started in March 2020, a crucial period when outbreaks were happening worldwide. According to the World Health Organization, daily confirmed cases diminished significantly in China at that time but increased rapidly in late February and later in several foreign countries such as Spain, Italy, Germany, the United Kingdom, and Canada (see https://covid19.who.int/). The Chinese media extended their focus to the situations in other countries, and most of them reported that the pandemic was increasingly serious and gradually became out of control (especially in Europe and North America). These news reports mainly reported the severity of COVID-19 and could be considered negative (Lu & Atadil, 2021; Su et al., 2021).

At the same time, the Chinese government launched a new immigration policy on February 27, 2020. It was an amendment to the old Chinese immigration law, intended to facilitate the application of permanent residence for foreigners. Everyone could express their opinions on this policy and vote for it from February 27 to March 27 by logging onto the government's website or sending an email before the policy was officially published. We found that most people expressed opposition and anger about the policy on social media. About ten days later after the launch, the government had to state that the policy would not be officially promulgated before public opinion was considered.

We wondered if negative media news in China about the foreign pandemic would trigger negative foreigner attitudes and eventually cause widespread non-acceptance of

the immigration policy. Thus, the primary goal of Study 2 was to test the spillover effect of exposure to negative COVID-19 news about foreign countries on Chinese immigration policy acceptance. We hypothesized that more exposure to such news could predict a more negative foreigner attitude, and that this attitude would be correlated with a greater perceived threat and higher non-acceptance of the immigration policy.

Method

Participants and Procedure

The data were collected between March 19 and 26, 2020 using an online survey platform (https://www.wenjuan.com/). To ensure sample representativeness, the survey was designed to cove as more regions in China as possible. Participants were compensated monetarily for their participation, and those who failed the attention check item (in the middle of the questionnaire) were automatically rejected to finish the survey. In total, 4502 participants from thirty provinces across China completed the survey, with 57.8% of the participants identifying as female, and age ranging from 16 to 73 years old (M_{age} = 30.62, SD_{age} = 8.12). Sensitivity analysis revealed that this study has 80% power to detect a quite small effect of Cohen's f^2 = 0.004 with 5% false-positive rate.

Participants first indicated their exposure to negative news about foreign countries handling COVID-19 and then were instructed to read a neutral introduction of the immigration policy and answer other questions. For the entire questionnaire, see: https://osf.io/s94gz/?view_only=259526b03d3c47099598ba60e8cb5362.

Measurement

Negative COVID-19 News Exposure. A single item captured the degree of

negative COVID-19 information that people received: "of all the information you had seen about pandemic prevention abroad, how many sources have shown that measures to control COVID-19 in foreign countries are worse than in China?" Participants answered on a scale from 1 = "few" to 5 = "almost all" ($M = 3.51$, $SD = 1.02$).

Foreigner Attitude. We used a single item to measure participants' attitude towards foreigners: "in general, how do you like foreigners?" Items were measured on a scale from 1 = "hate them a lot" to 5 = "like them a lot." A higher score indicated a more positive attitude towards foreigners ($M = 3.05$, $SD = 0.66$).

Intergroup Threat. Three items adopted from Kteily et al. (2015) were employed to measure reality threats and symbolic threats: foreign immigrants in China, as a group, (1) "pose a threat to other Chinese," (2) "take economic resources away from Chinese," and (3) "hold values that are morally inferior to those of Chinese." Items were measured on a scale from 1 = "completely disagree" to 5 = "completely agree." A higher score indicated a higher perceived threat ($α = .85$, $M = 2.96$, $SD = 0.99$).

Immigration Policy Acceptance. Two items were used to measure attitude towards immigration policy after participant read the policy's introduction: "what is your attitude to it in general?" (1 = "completely disagree", 5 = "completely agree") and "do you accept the enforcement of it?" (1 = "completely dis-accept", 5 = "completely accept") Higher scores indicated greater acceptance ($α = .92$, $M = 3.42$, $SD = 0.99$).

Vote for Immigration Policy. Participants were asked whether they had logged onto a website to vote for every act of the policy up to the survey day. There were 35 acts in the immigration policy, each one describing a detailed rule of the policy. One must evaluate all the acts (rating each one from "totally disagree" to "totally agree") before

finishing voting.

We used a 7-point item to capture their voting results (1 = "oppose most acts," 5 = "agree with most acts," 6 = "did not vote," 7 = "do not know"). Only data with scores ranging from 1 to 5 were used for the analysis, and of these, lower score indicated more disapproval of the immigration policy ($M = 3.59$, $SD = 1.06$).

Control Variables. We assessed the intergroup contact with a single item: "how frequently do you interact with foreigners." The item was measured on a scale from 1 – "never" to 5 = "frequently" ($M = 2.21$, $SD = .81$). Ethnic identity, as proven to predict negative attitudes towards immigrants (Kende et al., 2019), was also measured with two items adapted from Phinney and Ong (2007) to assess individual's pride as a Chinese and attachment to China. The items were measured on a 5-point Likert scale (1 = "strongly disagree," 5 = "strongly agree;" $\alpha = .82$; $M = 4.61$, $SD = .61$). Finally, demographic variables (age, sex, education, and income) were included.

Results

We ran several ordinary least squares (OLS) regression models. First, we found that negative news exposure could negatively predict acceptance of immigration policy, $b = -0.04$, $se = 0.01$, $p = .01$, indicating that more exposure to negative news about COVID-19 in foreign countries is related to lower acceptance of immigration policy.

In addition, more negative news was related to a more negative foreigner attitude ($b = -0.06$, $se = 0.01$, $p < .001$), which could significantly predict intergroup threats, $b = -0.26$, $se = 0.02$, $p < .001$. Moreover, participants with a higher intergroup threat were more resistant to immigration policy, $b = -0.42$, $se = 0.01$, $p < .001$. See Figure 2 (A) for the path coefficients and Table S2 in the appendix for all coefficients in the models.

We then used R package "lavaan" (Rosseel, 2012) to test the indirect effect. Results revealed a significant indirect effect of negative news exposure on immigration policy acceptance through foreigner and intergroup threats, effect = -0.007, 95% bootstrap CI = [-0.010, -0.004].

There were 2889 participants (64.2%) indicating their voting results. Vote behavior was then processed as a dependent variable as well. Negative news exposure had no significant predictive effect on vote behavior, b = -0.01, se = 0.02, p = .49. However, we found it was negatively associated with foreigner attitude were, b = -0.07, se = 0.01, p < .001. Moreover, negative attitudes towards foreigners predicted higher intergroup threat (b = -0.24, se = 0.03, p < .001), and intergroup threat was negatively related to immigration policy support (b = -0.38, se = 0.02, p < .001).

The significant indirect effect of negative news exposure on vote behavior via foreigner attitude and intergroup threat was -0.006, 95% bootstrap CI = [-0.010, -0.003]. The results revealed that there was an extra spillover effect of negative COVID-19 news exposure on immigration policy voting. See Figure 2 (B) for the path coefficients and Table S3 in the Appendix for more details.

[Figure 2 here]

Discussion

The contingencies of the COVID-19 pandemic all over the world and the new immigration policy from China from early 2020 provided a real-context case to test whether the effect of foreign COVID-19 media news exposure can spill over to people's attitudes towards immigration. Using a large-scale survey, we found an indirect effect of negative foreign COVID-19 news exposure on immigration attitudes and behaviors. As

expected, more negative foreign COVID-19 news exposure predicted more negative foreigner attitudes, and negative attitudes predicted higher levels of intergroup threats. Finally, both immigration policy acceptance and the number of votes for the immigration policy decreased.

We did not find a predictive effect of negative news exposure on the vote for immigration policies. Instead, we found a small indirect effect between the two. This result should be viewed with caution because the participants who went to vote may be those who strongly oppose immigration policy. Nevertheless, based on the results of Study 1, Study 2 still provides an initial outlook on the spillover effect of foreign COVID-19 media news on immigration policy.

In addition to the mechanism of associative attitude processes, the "behavioral immune system" (Schaller & Park, 2011) is another possible explanation for the spillover effect of negative foreign COVID-19 news. That is, negative foreign COVID-19 news may also lead to more worries about infection, which could result in higher perceived threats and prejudices towards outgroup (e.g., "anti-Asian" prejudice during the pandemic,   Dhanani & Franz, 2020). To rule out this alternative explanation, we introduced non-disease media messages to the participants in Study 3.

Study 3

The goal of Study 3 was to test the impact of non-disease negative media news exposure on people's attitudes towards foreigners and immigration policies. We still focused on the participants' attitudes towards immigration policy, but COVID-19 news was replaced with news about natural disasters. Moreover, in accordance with Study 2, the news targets were generalized to foreign countries rather than specific ones. We

predicted that individuals exposed to negative news coverage of natural disasters are more likely to harbor negative attitudes towards foreigners, perceive a greater sense of intergroup threat, and display less support for immigration policies.

Method

Participants

We recruited two hundred and fifty-eight participants in our experiment through an online experiment platform (www.credamo.com). Participants were compensated monetarily for their participation. Twelve participants who failed attention checks were excluded from all subsequent analyses, leaving a final sample of 246 individuals with 44.7% female. The age of the remaining participants ranged from 17 to 55 years old (M_{age} = 28.63, SD_{age} = 5.62). This sample size could detect an effect of at least Cohen's f = 0. 20 under 80% power with 5% false-positive rate, a small to medium effect according to Cohen's index (Cohen, 1992).

Materials

We manipulated negative news exposure using three different texts referring to natural disasters. The neutral news exposure condition neutrally introduced a system of emergency management in the face of natural disasters in foreign countries, with almost no valence words used. This condition was used as the control. The negative news exposure condition depicted the same thing, but indicated that the systems were terrible and bad for handling natural disasters. Both of these news items had almost the same number of words in one paragraph. Finally, the more negative news exposure condition used a negative tone to depict the same event, but was expanded to three paragraphs to

determine whether more negative news exposure (i.e., reading longer negative news) could induce stronger attitude changes. All three texts were presented in the form of pieces of news. For simplicity, they are referred to as the "control," "negative," and "more-negative" conditions. See

https://osf.io/s94gz/?view_only=259526b03d3c47099598ba60e8cb5362 for details.

Design and Procedure

We designed a one-way between-group experiment with three levels (control vs. negative vs. more-negative). Participants were randomly assigned to one of three conditions and exposed to different news. After reading the news, the participants evaluated the valence of the news for the manipulation check. Subsequently, they were told that China was going to introduce an immigration policy. They were asked to indicate their attitudes towards the policy and other attitudes on a Likert scale.

Measurement

Foreigner Attitude. We asked participants three questions to indicate their attitude towards foreigners: "generally speaking, what's your attitude to foreigners," "how do you like foreigners," and "do you accept a foreigner as your neighbor?" Participants recorded their responses on a 5-point Likert scale (1 = "completely negative/dis-like/dis-accept", 5 = "completely positive/like/accept"). Higher scores indicated more positive attitudes towards foreigners (Cronbach's α = .91, M = 3.48, SD = 0.87).

Intergroup Threat. We used the same items as those in Study 2 to measure the perceived intergroup threat of participants after they read the introduction of the

immigration policy (Cronbach's α = .83, *M* = 2.64, *SD* = 0.98).

Immigration Policy Acceptance. Immigration policy acceptance was measured

using the same items as in Study 2 (Cronbach's α = .94, *M* = 3.35, *SD* = 1.08). We also

measured some control variables, such as intergroup contact, age, education level, and

income.

Results

A one-way Welch's ANOVA indicated a significant difference in valence

evaluation of news among negative (*M* = 1.96, *SD* = 0.86), more-negative (*M* = 1.93, *SD*

= 0.88), and control conditions (*M* = 3.62, *SD* = 0.83), *F* (2, 153.3) = 114.9, *p* < .001;

partial η^2 = .60, 90% CI = [.52, .66]. The post-hoc test revealed a more positive

evaluation in the control condition than in the other two conditions, *t* (243) = 12.68, *p*

< .001; *t* (243) = 12.75, *p* < .001, but no difference was found between the negative and

more-negative conditions, *t* (243) = 0.21, *p* = .98. Thus, the manipulation of media news

achieved the expected negative valences.

There was a significant difference among the three conditions for immigration

policy acceptance, *F* (2,153.6) = 6.18, *p* = .003; partial η^2 = 0.07, 90%CI = [.02, .14] (see

Figure 3, left). Specifically, compared with the control condition, acceptance was lower

in the more-negative condition, *t* (243) = 3.44, *p* = .002. However, no significant

difference was found between the negative and more-negative conditions, *t* (243) = 1.24,

p = .43. The results mean that reading a piece of negative news that is not about

immigration issues, but about foreign countries, could reduce participants' acceptance of

immigration policy.

Additionally, more differences in both foreigner attitudes and intergroup threats

between conditions were found (see Figure 3, middle & right). There was a significant difference in foreigner attitudes among the three conditions, $F(2, 152.9) = 7.15$, $p = .001$; partial $\eta^2 = .09$, 90% CI = [.02, .16], and intergroup threat, $F(2, 151.4) = 8.80$, $p < .001$; partial $\eta^2 = .10$, 90%CI = [.03, .18]. Post-hoc tests showed that compared to the control condition, participants held more negative evaluations and higher threats towards foreigners in the more-negative condition, $t(243) = 3.78$, $p < .001$; $t(243) = 4.08$, $p < .001$. However, no difference was found between the negative and more-negative conditions.

[Figure 3 here]

In short, participants who were exposed to negative news about natural disasters in foreign countries held a more negative attitude towards foreigners, perceived a higher threat, and were more unlikely to support the immigration policy in China.

We then conducted a regression analysis. Negative news exposure was treated as a multi-categorical variable using the control condition as the reference. We found that a more negative foreigner attitude predicted higher intergroup threat, $b = -0.861$, $se = 0.054$, $p < .001$, and higher intergroup threat predicted lower acceptance of immigration policy, $b = -0.835$, $se = 0.043$, $p < .001$. See Figure 4 and Table S4 in the appendix for more information.

[Figure 4 here]

Finally, we estimated the indirect effect of negative news exposure on immigration policy acceptance through foreigner and intergroup threats. The indirect effect was -0.093 with a 95% bootstrap CI [-0.277, 0.082] for the negative condition and -0.235 with a 95% bootstrap CI [-0.427, -0.064] for the more-negative condition,

compared to the control condition. Compared with neutral readings, more exposure to negative news about natural disasters in foreign countries influenced participants' immigration policy acceptance through the serial mediation of foreigner attitudes and intergroup threats.

Discussion

In this study, we investigated the effect of foreign COVID-19 news on people's attitudes toward immigration policy. We found that people who had read negative but non-disease news changed their attitude towards foreigners: they perceived more intergroup threat and showed lower acceptance of immigration, indicating that a spillover process from negative news exposure to immigration policy acceptance exists. The results cannot be explained by the fear of infection or "behavioral immune system" alone (see Schaller & Park, 2011). Instead, it shows that the perspective of association activation and spreading processes underlining the spillover effect fits the evidence here.

Moreover, the results showed that more exposure to negative news was correlated with a more remarkable change in the participants' attitudes, which is in line with what we found in Study 2, suggesting the importance of the magnitude of news exposure. Somewhat unexpectedly, the short negative news in Study 3 did not lead to expected outcomes compared with the neutral condition (although there was a trend). It seems that the evaluative prime effect is not sufficient for the intensity of the short version of negative news, but the exposure to longer versions of negative news satisfied it and was more ecological because in real life, we receive news every day.

In general, Studies 1 and 2 together provide evidence about the spillover effect of negative foreign COVID-19 news on immigrant attitudes via association changes and

intergroup threat processes.

General Discussion

Media plays an important role in guiding public opinion and social attitudes toward immigration issues (Hmielowski et al., 2014; Silver & Andrey, 2019), but little attention has been paid to the spillover effect of news on immigration issues during the pandemic. We conducted three studies that provided initial evidence on how negative news about other countries can increase people's objection to domestic immigration policies.

We explain it using the COVID-19 case. News about other countries can be seen as a pairing of foreign countries with negative valence (especially news with pictures about hospitals, patients, or viruses). When individuals read such news in the media, they tend to construct a new association of foreign countries with the specific valence of the news (or associations change corresponding to such news). In Study 1, we found that associations between countries changed after reading COVID-19 news. Furthermore, associations can spread to other concepts if there are any common features between them (Hughes et al., 2020). For example, "foreign countries" activates "foreigners," resulting in an attitude towards the latter concept with a certain valence, as shown in Study 2. When individuals are to express opinions or judgements about targets related to the latter concept (e.g., the immigrant policy), activated attitudes cause more perceived intergroup threat and nonsupport for immigration policy. We observed such a spillover effect in Study 2 in a real event of immigration policy voting in China. Note that intergroup contact and ethnic identity were controlled. More importantly, in Study 3, we revealed that such spillover effects can not only be explained by an evolutionary perspective, such

as the need for body immunity from pathogens (see Schaller & Park, 2011). Instead, the

association perspective of attitudes is highly relevant and should be given more attention.

The results shed light on a new perspective in immigration research. Traditionally,

only media news about immigrants was thought to be a significant factor that changed

people's attitudes and behaviors towards immigrants and immigration policies (e.g.,

Héricourt & Spielvogel, 2014; Valentino et al., 2013). However, our research indicates

that messages and information about COVID-19 can also alter attitudes towards

immigrants. Indeed, just a negative message about COVID-19 in other countries could

induce objections towards immigration policy. These findings help elucidate why people

can hold a confirmed prejudice to foreigners due to seemingly unrelated messages.

Additionally, the current research highlights a closer scrutiny of news. Our

findings provide an initial framework of associative attitude processes and intergroup

threats to understand spillover effects of media news. Previous research on the spillover

effect of media news has mainly focused on its impact (e.g., Engel, 2013; Sikorski et al.,

2019). Although some early pioneering studies have summarized spillover effects (Bless

& Schwarz, 1998), the cognitive processes behind spillover effects remain largely

unknown. This study may be an exploratory springboard to unfold the deep mechanism

of the spillover effect itself. Furthermore, based on the invisible influence of foreign

COVID-19 news on immigration policy acceptance, we believe that more similar effects

exist, particularly because individuals are surrounded by plentiful media news and other

messages, especially in an era in which social media is becoming one of the most popular

sources of information (Xie et al., 2017). Importantly, the spillover effect of media news

could potentially impact people's attitudes and behaviors towards critical policies or

public opinion polls. In our real-life case in Study 2, a new immigration policy in China was suspended with huge objections on social media and in voting results due to the indirect effect of negative foreign COVID-19 news. The vote result is a critical factor showing the potential importance of spillover effects of media that the government must consider when developing public policy and laws.

Spillover effects of media messages may be more significant during the COVID-19 situation because the pandemic provides people with an excuse to disseminate extreme and hateful words towards some groups on the Internet. Evidence has shown that COVID-19 news about Asians has increased people's prejudice and racism towards them (Lu et al., 2021). Our research extended this evidence and demonstrated that such news are related to individuals' lives than previously thought. Additionally, the association process offers a crucial perspective for understanding these results. Future studies can benefit from current research on the formation and change of people's negative foreigner attitudes during a pandemic, such as stigmatization.

Our research has some limitations. First, although we theoretically justified the sequential relationship between variables, we did not test casual effect for our mediators. Second, we did not include positive media news in Studies 2 and 3, so it is difficult to know whether positive messages can increase support for immigration policy based on the same association (and spreading) processes. In addition, in Study 2, news exposure in real life was assessed using a single self-report item, which may not accurately capture the full scope of the concept. To provide a more objective measure of news coverage, future research should consider utilizing text analysis techniques. (Montiel et al., 2014) and examine the spillover effect of news exposure further. Finally, news exposure is a

complex process that involves many factors such as exposure time and media type. We have not conducted a comprehensive investigation of these factors, hence it is advisable to approach the generalization of our research findings with caution.

References

Aberson, C. L., & Gaffney, A. M. (2009). An integrated threat model of explicit and implicit attitudes. *European Journal of Social Psychology*, *39*(5), 808–830. https://doi.org/10.1002/ejsp.582

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, 67(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Bless, H., & Schwarz, N. (1998). Context effects in political judgement: assimilation and contrast as a function of categorization processes. *European Journal of Social Psychology*, *28*, 159–172. https://doi.org/10.1002/(SICI)1099-0992(199803/04)28:2

Cohen J. (1992). A power primer. Psychological bulletin, 112(1), 155–159. https://doi.org/10.1037//0033-2909.112.1.155

Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, *82*(6), 407–428. https://doi.org/10.1037/0033-295X.82.6.407

Conway, B. A., Kenski, K., & Wang, D. (2015). The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary. *Journal of Computer-Mediated Communication*, *20*(4), 363–380.

https://doi.org/10.1111/jcc4.12124

Croucher, S. M., Nguyen, T., & Rahmani, D. (2020). Prejudice toward Asian Americans in the Covid-19 pandemic: The effects of social media use in the United States. *Frontiers in Communication*, *5*. https://doi.org/10.3389/fcomm.2020.00039

Das, E., Bushman, B. J., Bezemer, M. D., Kerkhof, P., & Vermeulen, I. E. (2009). How terrorism news reports increase prejudice against foreigners: A terror management account. *Journal of Experimental Social Psychology*, *45*(3), 453–459. https://doi.org/10.1016/j.jesp.2008.12.001

De Poli, S., Jakobsson, N., & Schüller, S. (2016). The drowning-refugee effect: media salience and xenophobic attitudes. *Applied Economics Letters*, *24*(16), 1167–1172. https://doi.org/10.1080/13504851.2016.1262513

Dhanani, L. Y., & Franz, B. (2020). Unexpected public health consequences of the COVID-19 pandemic: a national survey examining anti-Asian attitudes in the USA. *International Journal of Public Health*, *65*(6), 747–754. https://doi.org/10.1007/s00038-020-01440-0

Engel, S. M. (2013). Frame spillover: Media framing and public opinion of a multifaceted LGBT rights agenda. *Law & Social Inquiry*, *38*(2), 403–441. https://doi.org/10.1111/j.1747-4469.2012.01319.x

Esses, V. M. (2020). Prejudice and Discrimination Toward Immigrants. Annual Review of Psychology, 71, 361–385. https://doi.org/10.1146/annurev-psych-080520-102803Esses, V. M., & Hamilton, L. K. (2021). Xenophobia and anti-immigrant attitudes in the time of COVID-19. Group Processes & Intergroup Relations, 24(2), 253–259. https://doi.org/10.1177/1368430220983470

Esses, V. M., Medianu, S., & Lawson, A. S. (2013). Uncertainty, threat, and the role of the media in promoting the dehumanization of immigrants and refugees. *Journal of Social Issues*, *69*(3), 518–536. https://doi.org/10.1111/josi.12027

Esses, V. M., Medianu, S., & Sutter, A. (2021). The dehumanization and rehumanization of refugees. In M. Kronfeldner (Eds), *The Routledge Handbook of Dehumanization* (pp. 275–291). Routledge. https://go.exlibris.link/YX7Z4FMK

Esses, V. M., Sutter, A., Bouchard, J., Choi, K. H., & Denice, P. (2021). North American Attitudes toward Immigrants and Immigration in the Time of COVID-19: The Role of National Attachment and Threat. The ANNALS of the American Academy of Political and Social Science, 697(1), 148–173. https://doi.org/10.1177/00027162211057501

Fabrigar, L. R., Priester, J. R., Petty, R. E., & Wegener, D. T. (1998). The impact of attitude accessibility on elaboration of persuasive messages. *Personality and Social Psychology Bulletin*, *24*(4), 339–352. https://doi.org/10.1177/0146167298244001

Gawronski, B., & Bodenhausen, G. V. (2014). Implicit and explicit evaluation: A brief review of the associative–propositional evaluation model. *Social and Personality Psychology Compass*, *8*(8), 448–462. https://doi.org/10.1111/spc3.12124

Greenwald, & Banaji. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*(1), 4–27. https://doi.org/10.1037//0033-295X.102.1.4

Greenwald, A. G., & Lai, C. K. (2020). Implicit social cognition. *Annual Review of Psychology*, *71*, 419–445. https://doi.org/10.1146/annurev-psych-010419-050837

Héricourt, J., & Spielvogel, G. (2014). Beliefs, media exposure and policy preferences on

immigration: evidence from Europe. *Applied Economics*, *46*(2), 225–239.

https://doi.org/10.1080/00036846.2013.844330

Hmielowski, J. D., Feldman, L., Myers, T. A., Leiserowitz, A., & Maibach, E. (2014). An

attack on science? Media use, trust in scientists, and perceptions of global

warming. *Public Understanding of Science*, *23*(7), 866–883.

https://doi.org/10.1177/0963662513480091

Hughes, S., Houwer, J. D., Mattavelli, S., & Hussey, I. (2020). The shared features

principle: If two objects share a feature, people assume those objects also share

other features. *Journal of Experimental Psychology General*, *149*(12).

https://doi.org/10.1037/xge0000777

Kende, A., Hadarics, M., & Szabo, Z. P. (2019). Inglorious glorification and attachment:

National and European identities as predictors of anti- and pro-immigrant

attitudes. *British Journal of Social Psychology*, *58*(3), 569–590.

https://doi.org/10.1111/bjso.12280

Kteily, N., Bruneau, E., Waytz, A., & Cotterill, S. (2015). The ascent of man: Theoretical

and empirical evidence for blatant dehumanization. *Journal of Personality and

Social Psychology*, *109*(5), 901–931. https://doi.org/10.1037/pspp0000048

Kurdi, B., & Banaji, M. R. (2017). Repeated evaluative pairings and evaluative

statements: How effectively do they shift implicit attitudes? *Journal of

Experimental Psychology: General*, *146*(2), 194–213.

https://doi.org/10.1037/xge0000239

Lu, Q., & Atadil, H. A. (2021). Do you dare to travel to China? An examination of

China's destination image amid the COVID-19. *Tourism Management Perspectives*, *40*, 100881. https://doi.org/10.1016/j.tmp.2021.100881

Lu, Y., Kaushal, N., Huang, X., & Gaddis, S. M. (2021). Priming COVID-19 salience increases prejudice and discriminatory intent against Asians and Hispanics. *Proceedings of the National Academy of Sciences of the United States*, *118*(36). https://doi.org/10.1073/pnas.2105125118

Miller, J. M. (2007). Examining the mediators of agenda setting: A new experimental paradigm reveals the role of emotions. *Political Psychology*, *28*(6), 689–717. https://doi.org/10.1111/j.1467-9221.2007.00600.x

Montiel, C. J., Salvador, A. M. O., See, D. C., & De Leon, M. M. (2014). Nationalism in local media during international conflict: Text mining domestic news reports of the China-Philippines maritime dispute. *Journal of Language and Social Psychology*, *33*(5), 445–464. https://doi.org/10.1177/0261927x14542435

Phinney, J. S., & Ong, A. D. (2007). Conceptualization and measurement of ethnic identity: Current status and future directions. *Journal of Counseling Psychology*, *54*(3), 271–281. https://doi.org/10.1037/0022-0167.54.3.271

Pickup, M., de Rooij, E. A., van der Linden, C., & Goodwin, M. J. (2021). Brexit, COVID-19, and attitudes toward immigration in Britain. *Social Science Quarterly*, 102(5), 2184-2193. https://doi.org/10.1111/ssqu.13010

Puente-Diaz, R. (2015). Can the Same Politician Help and Hurt the Evaluations of Another Politician? The Role of Categorization on the Elicitation of Assimilation and Contrast Effects in the Mexican Political Context. *Political Psychology*, *36*(4), 469–478. https://doi.org/10.1111/pops.12079

Régner, I., & Floch, V. L. (2005). When political expertise moderates the impact of

    scandals on young adults' judgments of politicians. *European Journal of Social*

    Psychology, *35*(2), 255–261. https://doi.org/10.1002/ejsp.245

Renfro, C. L., Duran, A., Stephan, W. G., & Clason, D. L. (2006). The role of threat in

    attitudes toward affirmative action and its beneficiaries. *Journal of Applied Social*

    Psychology, *36*(1), 41–74. https://doi.org/10.1111/j.0021-9029.2006.00003.x

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of*

    Statistical Software, 48(2). https://doi.org/10.18637/jss.v048.i02

Russell Neuman, W., Guggenheim, L., Mo Jang, S., & Bae, S. Y. (2014). The dynamics

of public attention: Agenda-setting theory meets big data. *Journal of Communication*,

64(2), 193–214. https://doi.org/10.1111/jcom.12088

Schaller, M., & Park, J. H. (2011). The behavioral immune system (and why it matters).

    Current Directions in Psychological Science, *20*(2), 99–103.

    https://doi.org/10.1177/0963721411402596

Schlueter, E., & Davidov, E. (2013). Contextual sources of perceived group threat:

    Negative immigration-related news reports, immigrant group size and their

    interaction, Spain 1996–2007. *European Sociological Review*, *29*(2), 179–191.

    https://doi.org/10.1093/esr/jcr054

Sikorski, C., Heiss, R., & Matthes, J. (2019). How political scandals affect the electorate.

    Tracing the eroding and spillover effects of scandals with a panel study. *Political*

    Psychology, *41*(3), 549–568. https://doi.org/10.1111/pops.12638

Silver, A., & Andrey, J. (2019). Public attention to extreme weather as reflected by social

    media activity. *Journal of Contingencies and Crisis Management*, 27(4), 346-358.

https://doi.org/10.1111/1468-5973.12265

Stephan, W. G., & Stephan, C. W. (2017). Intergroup Threat Theory. In Y. Y. Kim (Eds),

The International Encyclopedia of Intercultural Communication (pp. 1-12).

https://doi.org/10.1002/9781118783665.ieicc0162

Stephan, W. G., Ybarra, O., & Rios, K. (2016). Intergroup Threat Theory. In T. D. Nelson

(Ed.), *Handbook of prejudice, stereotyping, and discrimination* (pp. 255–278).

Psychology Press.

Su, Z., McDonnell, D., Wen, J., Kozak, M., Abbas, J., Segalo, S., Li, X., Ahmad, J.,

Cheshmehzangi, A., Cai, Y., Yang, L., & Xiang, Y. T. (2021). Mental health

consequences of COVID-19 media coverage: the need for effective crisis

communication practices. *Global Health*, *17*(1), 4.

https://doi.org/10.1186/s12992-020-00654-4

Valentino, N. A., Brader, T., & Jardina, A. E. (2013). Immigration Opposition Among

U.S. Whites: General Ethnocentrism or Media Priming of Attitudes About

Latinos? *Political Psychology*, *34*(2), 149–166. https://doi.org/10.1111/j.1467-

9221.2012.00928.x

Xie, Y. G., Qiao, R., Shao, G. S., & Chen, H. (2017). Research on Chinese social media

users' communication behaviors during public emergency events. *Telematics and
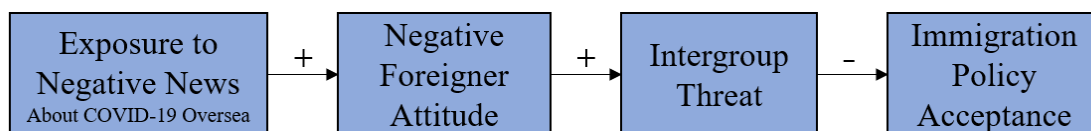
Informatics*, *34*(3), 740–754. https://doi.org/10.1016/j.tele.2016.05.

Figure 1. Proposed theoretical framework

A

| Exposure to Negative News About COVID-19 Oversea | -0.06*** → | Negative Foreigner Attitude | -0.26*** → | Intergroup Threat | -0.42*** → | Immigration Policy Acceptance |

B

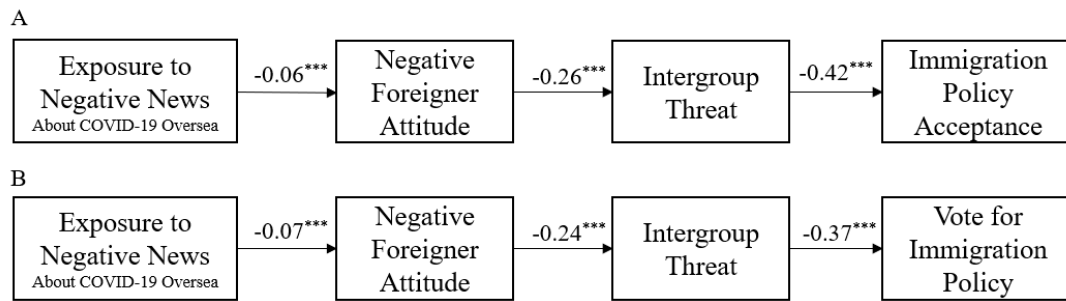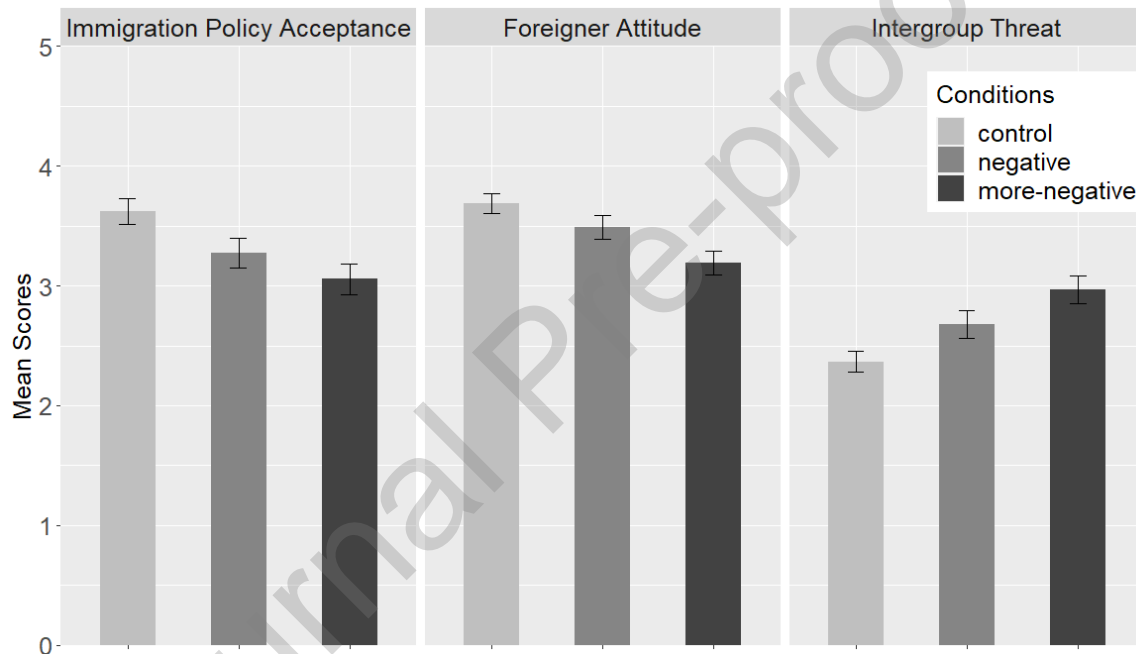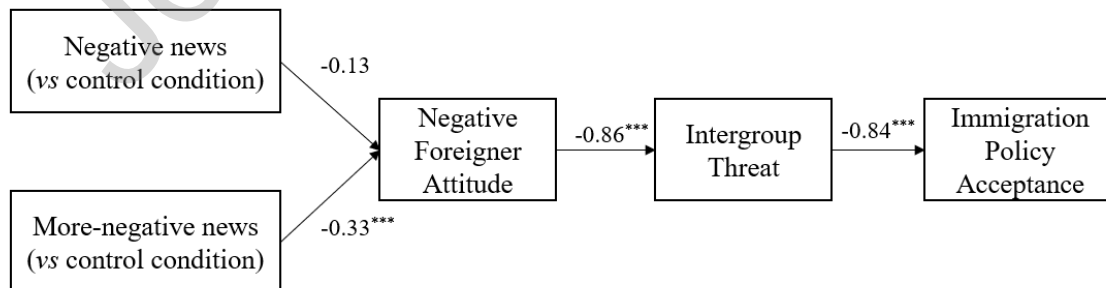| Exposure to Negative News About COVID-19 Oversea | -0.07*** → | Negative Foreigner Attitude | -0.24*** → | Intergroup Threat | -0.37*** → | Vote for Immigration Policy |

Figure 2. Main path coefficients in Study 2, examining the outcomes of immigration policy acceptance (A) and voting behavior on immigration policy (B)(**p < .01; ***p < .001)

Figure 3. Mean rating scores (with standard error bars) of immigration policy acceptance, outgroup attitude, and intergroup threat in three conditions (**p < .01, ***p < .001)

Negative news (*vs* control condition)	-0.13 ↘					
		Negative Foreigner Attitude	-0.86*** →	Intergroup Threat	-0.84*** →	Immigration Policy Acceptance
More-negative news (*vs* control condition)	-0.33*** ↗					

Figure 4. Main path coefficients in Study 3 (**p < .01, ***p < .001). Dummy coding was used with the control condition as the reference group

Table 1. Pairing words frequency and rank.

		Countries		Total
		Sudan	Tonga	
Adjectives	positive	159 (64.1%)	109 (49.8%)	268 (57.4%)
	negative	89 (35.9%)	110 (50.2%)	199 (42.6%)
	total	248 (100%)	219 (100%)	467 (100%)
Ranks	high	32 (78.0%)	9 (22.0%)	41 (50%)
	low	9 (22.0%)	32 (78.0%)	41 (50%)
	total	41 (100%)	41 (100%)	82 (100%)

Table 2. Random intercept Poisson regression model.

Random effects				
Group	Name	Variance	Std.dev.	
Participant ID	(Intercept)	0.067	0.258	

Number of observations: 164, group:

Participant ID, 41

Fix effects				
	Estimate	Std.error	Z value	P value
(Intercept)	0.741	0.114	6.503	< 0.001
Country	0.212	0.142	1.492	0.135
Adjective valence	0.580	0.132	4.401	< 0.001
Country*Adjective valence	-0.589	0.188	-3.128	0.002

Note. Marginal $R^2 = 0.095$, Conditional $R^2 = 0.240$, AIC = 641.1, BIC = 656.6, ICC = 0.063.